

Amendments To The Claims

The following list of the claims replaces all prior versions and lists of the claims in this application.

1. (Currently amended) A method of operating a variable reluctance machine as a generator, the machine having a rotor and at least one phase winding, the method comprising:
creating a bias flux ~~linking~~ that varies with rotor position and that links the at least one phase winding; and
limiting the phase voltage to a magnitude below that otherwise induced in the phase winding by the bias flux.
2. (Original) A method as claimed in claim 1 further including restricting the flow of current in the at least one phase winding to one direction.
3. (Original) A method as claimed in claim 2 further including restricting the flow of current by at least one diode which also serves to limit the phase voltage.
4. (Original) A method as claimed in claim 3 in which the diode is part of a full-wave rectifier circuit.
5. (Original) A method as claimed in claim 1 further including causing the phase current to flow through a resistor.
6. (Original) A method as claimed in claim 1 further including controlling an electrical output of the machine by controlling the bias flux.
7. (Original) A method as claimed in claim 1 further including creating the bias flux linking the at least one phase winding with a bias coil or coils.

8. (Original) A method as claimed in claim 7 in which the machine is polyphase and the bias coil(s) is/are arranged to couple with a proportion of the phase windings of the machine.

9. (Original) A method as claimed in claim 7 in which the bias flux is produced by a constant current in the or each bias coil.

10. (Original) A method as claimed in claim 7 in which the bias flux is produced by an alternating current in the or each bias coil.

11. (Original) A method as claimed in claim 1 wherein the machine is connected to a power converter circuit.

12. (Original) A method as claimed in claim 11 in which the power converter circuit is free of active switches.

13. (Original) A method as claimed in claim 11 in which the power converter circuit includes active switches which are kept open while the variable reluctance machine is operated as a generator.

14. (Original) A method as claimed in claim 1 including controlling output power of the machine by controlling the speed of the machine.

15. (Original) A method as claimed in claim 1 including controlling output power of the machine by adjusting the magnitude to which the phase voltage is limited.

16. (Currently amended) A variable reluctance machine ~~having~~ comprising:
a first part with at least one phase ~~winding and~~ winding;

a second part which is arranged to move relative to the first part to generate electrical power;

means for creating a bias flux ~~linking~~ that varies with the position of the second part relative to the first part, and that links the at least one phase winding; and

means for limiting the magnitude of the phase voltage below that otherwise induced in the at least one phase winding by the bias flux.

17. (Original) A machine as claimed in claim 16 including means for restricting the flow of current in the at least one phase winding to one direction.

18. (Original) A machine as claimed in claim 17 in which the means for restricting and the means for limiting collectively comprise at least one diode.

19. (Original) A machine as claimed in claim 18 in which the at least one diode is serially connected with the at least one phase winding.

20. (Original) A machine as claimed in claim 19 in which the at least one diode is part of a full-wave rectifier circuit.

21. (Original) A machine as claimed in claim 16 in which the means for creating a bias flux comprises at least one bias coil.

22. (Original) A machine as claimed in claim 21 in which the machine is polyphase and the bias coil is arranged to couple with a proportion of the phases.

23. (Original) A machine as claimed in claim 21 including a constant current source connected to excite the at least one bias coil.

24. (Original) A machine as claimed in claim 21 including an alternating current source connected to the at least one bias coil.

25. (Original) A machine as claimed in claim 16 connected to a power converter circuit.

26. (Original) A machine as claimed in claim 25 in which the machine is a generator and in which the power converter is free of active switches.

27. (Original) A machine as claimed in claim 16 in which the machine is a generator and includes a resistive load connected across the or each phase winding.

28. (New) A machine as claimed in claim 16,
wherein said movement of said second part relative to said first part is rotational movement about an axis;

wherein said first part has a plurality of said phase windings, and has a plurality of poles that are spaced angularly about said axis, each said phase winding having a portion that is wound around at least one of said poles; and

wherein said means for creating a bias flux includes a bias coil having plural portions that are each wound around a respective one of said poles.

29. (New) A machine as claimed in claim 16,
wherein said movement of said second part relative to said first part is rotational movement about an axis; and

wherein said means for creating a bias flux includes a bias coil stationarily supported on said first part and having a loop with first and second portions on opposite sides of the loop, said first and second portions being disposed on diametrically opposite sides of said first part and each extending approximately parallel to said axis.

30. (New) A machine as claimed in claim 29 wherein said first part has a plurality of said phase windings, and has a plurality of poles that are spaced angularly about said axis, each said phase winding having a portion that is wound around at least one of said poles.

31. (New). A method comprising operating as a generator a variable reluctance machine having a stator that defines stator poles, having a rotor that is rotatable relative to the stator and that defines rotor poles, and having at least one phase winding arranged in relation to the stator poles for generating a phase voltage output, excitation of the phase winding driving flux around a magnetic circuit having a reluctance that varies as a function of rotor position, said operating as a generator including:

creating a bias flux around said magnetic circuit; and

limiting the phase voltage to a magnitude below that otherwise induced in the phase winding by the bias flux.